

Tehama-Colusa Canal Authority

P.O. BOX 1025 • 5513 HWY 162 • WILLOUGHBY, CA 95988 • 916-934-2355 FAX 916-934-2355

July 25, 1997

Ms. Kate Hansel
CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Re: Proposals, Category III Funding

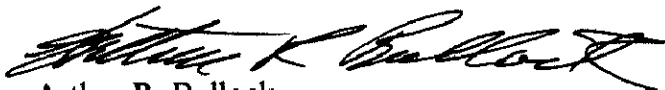
Dear Ms. Hansel:

Attached are ten (10) copies each of the following two proposals for funding under your Category III RFP:

- Study of the Impacts Associated With Rapid Gate Removal at Red Bluff Diversion Dam to Facilitate Benefits for Winter-Run Salmon Migration and Survival
- Tehama-Colusa Canal Storage Feasibility Study

Should you have any questions or require additional information, please contact me.

Sincerely,



Arthur R. Bullock
General Manager

Enclosures

DWR WAREHOUSE

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I. EXECUTIVE SUMMARY

a. Project Title

Study of Impacts Associated With Rapid Gate Removal at Red Bluff Diversion Dam to Facilitate Benefits for Winter-Run Chinook Salmon Migration and Survival.

b. Applicant Name

Tehama-Colusa Canal Authority

c. Approach/Tasks/Schedule

The Red Bluff Diversion Dam (RBDD) is operated so that gates are out for eight months from September 15th until May 15th annually for protection of migrating winter-run chinook salmon. Gates are in four months from May 15th until September 15th to allow water deliveries to be made to the Tehama-Colusa and Corning Canals by a gravity fed system when Lake Red Bluff forms.

If agriculture demands are small, Phase I of this project will be implemented during the second two weeks of May 1998. This schedule is established to work within the current constraints of the operation of RBDD. Gates will be raised on May 20th allowing for a 72 hour draining of Lake Red Bluff and East Sand Slough to establish a baseline set of conditions for shoreline erosion or "sluffing" and possible fish straying and stranding in East Sand Slough. Once all observations are made, the gates will be returned to their lowered position until May 30th. On May 30th, the gates will be removed from the River for a second time and draining of the Lake will be accelerated to be completed in a 24 hour period. A second round of observations will be made to identify adverse impacts, if any, caused by the more rapid draining of the Lake. Gates will then be dropped for normal summer operation after observations are made. Phase I observations will include evaluation of geomorphic and hydraulic processes associated with rapid drawdown as well as evaluation of environmental and biological data associated with the rapid drawdown. Gates will then be left in until September 15, 1998 pursuant to the Biological Opinion (BO). This evaluation will be limited to the confines of Lake Red Bluff and East Sand Slough, an overflow bypass of the Sacramento River which is inundated when gates are in and Lake Red Bluff forms.

Phase II tasks will occur in the Fall of 1998 and are associated with a repeat of Phase I tasks which occurred in the previous Spring. The gates at RBDD will be raised about ten days early (prior to September 15th) and the Lake will be drained in 72 hours. Once observations are complete, the gates will be lowered and the Lake will refill and remain full until September 15th. On September 15th, the gates will be removed as per the BO and the Lake will be rapidly drained in 24 hours. The same task sequencing as in Phase I will be followed.

d. Justification for Project and Funding by CALFED

This project focuses on species and habitats identified by CALFED as priorities. Specifically, this project addresses concerns relevant to instream aquatic habitat, shaded riverine aquatic

habitat, seasonal wetland, and aquatic habitat located in the upper Sacramento River (North Sacramento Valley CALFED Study Area). This action is proposed to benefit winter-run, spring-run, fall-run, late-fall chinook salmon and steelhead migrating past RBDD and Lake Red Bluff.

The proposed study will also provide insights into environmental stressors associated with river flow manipulation, fish stranding, migration barriers, stream meander and undesirable species interactions. This project augments current USFWS and USBR research at RBDD involving long-term fish passage solutions for RBDD. The project is innovative and should facilitate immediate and long-term benefits for winter-run chinook salmon.

e. Budget Costs and Third Party Impacts

This project will impact the current Biological Opinion as it relates to reasonable and prudent alternatives promulgated by NMFS to operate RBDD for protection of winter-run chinook salmon. The project provides an opportunity to reduce the period of time when gates at Lake Red Bluff are in during emergency closures.

f. Applicant Qualifications

The TCCA has played a proactive role in addressing fisheries problems at RBDD and has developed and implemented numerous "adaptive management" techniques which have benefited the recovery of winter-run chinook salmon. The TCCA serves as a liaison and is a participant in all public forums and technical work groups associated with RBDD fisheries research. TCCA has considerable experience at the programmatic level to administer the engineering and biological research required by this project. The designated Technical Program Manager will be Mr. Serge Birk, who has considerable experience implementing restoration projects in the Sacramento, Trinity and Klamath systems.

g. Monitoring and Data Evaluation

This project will incorporate biological and hydrological monitoring components to evaluate the efficacy of rapid withdrawal. Concerns relative to possible fish stranding in East Sand Slough will be evaluated and recommendations will be made to resource agencies. This project involves monitoring four discrete events, two in the Spring and two in the Fall of 1998.

h. Local Support/Coordination With Other Programs/Compatibility with CALFED Objectives

This project is synergistic with the overall objects of CALFED, CVPIA, Biological Opinion for Operation of RBDD, RBDD Research Pumping Plant, RBDD Long Term Fish Passage Program, and Draft Winter-run Salmon Recovery Plan.

II. TITLE PAGE

a. Title of Project

Study of Impacts Associated With Rapid Gate Removal at Red Bluff Diversion Dam to Facilitate Benefits for Winter-run Chinook Salmon Migration and Survival.

b. Name of Applicant/Principal Investigator(s); phone /fax/E-mail; Organizational, Institutional or Corporate Affiliations of Applicant/Principal Investigators(s)

Tehama-Colusa Canal Authority	Voice:	916-934-2125
Mr. Arthur R. Bullock, General Manager	Fax:	916-934-2355
P.O. Box 1025	E-mail:	tcwaterman@aol.com
Willows, CA 95988		

c. Type of Organization and Tax Status

Public Agency-Non Profit

d. Tax identification Number and or Contractor license, as applicable

68-0139216

e. Technical and Financial Contact person (s), address, phone /fax/E-mail (if different than above) Participants/Collaborators in Implementation

Technical Contact

Mr. Serge Birk, Fisheries Biologist
Central Valley Project Water Association
18750 Drake Road
Red Bluff, CA 96080
Voice: 916-529-4334
Fax: 916-529-5758
E-mail: sergebirk@msn.com

Financial Contact

Ms. Jan Jennings
Tehama-Colusa Canal Authority
P.O. Box 1025
Willows, CA 95988
Voice: 916-934-2125
Fax: 916-934-2355
E-mail: tcwaterman@aol.com

f. Participants/Collaborators in Implementation

USBR, USFWS, NMFS, CDFG, USFS, USCOE

g. RFP Project Group Type(s) (Construction; Acquisition; Other Services)

“Other Services” (Study of operational flexibility at RBDD addressing CALFED stressors, habitat and priority species)

III. PROJECT DESCRIPTION AND APPROACH

a. Project Description and Approach

The purpose of this project is to investigate and evaluate operational alternatives associated with seasonal diversions at RBDD. Currently, RBDD is operated so that gates are lowered on May 15th to form Lake Red Bluff. This then allows for water diversions to the Tehama-Colusa and Corning Canals from the Sacramento River via gravity flow deliveries from Lake Red Bluff. Gates are removed on September 15th. This operational regime has been established by the National Marine Fisheries Service (NMFS) as part of the reasonable and prudent alternatives presented in the Biological Opinion (BO) issued to the Bureau of Reclamation (USBR) under the auspices of the Endangered Species Act (Act) for protection of Winter-Run chinook salmon adult and juvenile migration (NMFS 2/12/93).

Further, the BO states that "NMFS will review proposals for intermittent gate closures of up to ten days one time per year on a case-by case basis". Intermittent gate closure at RBDD was required last year as an emergency action as a result of a water delivery and supply shortage.

This project will determine if intermittent gate closures at RBDD can be achieved more efficiently and require less time to accomplish. Currently, it takes 72 hours to drain Lake Red Bluff when gates are removed at RBDD. However Sacramento River flows can fill the Lake in less than twenty-four hours when the gates are lowered. The slow draining period has been established in order to reduce potential erosion and bank damage along Lake Red Bluff shoreline. However it is undocumented whether or not the erosion problem really exists. If the Lake can be drained in one day (as proposed) instead of three days, emergency gate closure period can be reduced from ten days to eight days or less, therefore reducing impacts to migrating fish during critical migration times.

This study will evaluate the impacts of rapid draining of Lake Red Bluff and will identify negative impacts, if any. Furthermore, this study will identify alternative operational flexibility which would result in benefits to migrating fry, juvenile and adult salmon.

This study will also any investigate any impacts rapid gate closures may have on potential stranding of adult and juvenile fish, amphibians and reptiles with specific assessment stressors and processes identified by CALFED.

b. Location and Geographic Boundaries of the Project

The proposed Project is located on the upper Sacramento River in Tehama County adjacent to the City of Red Bluff (see attached Map). The project will focus on the perimeter of Lake Red Bluff and on East Sand Slough which connects with the Sacramento River as a bypass channel at two locations. Lake Red Bluff is formed when gates are in and the Sacramento River is impounded for delivery of agriculture water into the Tehama-Colusa and Corning canals. East Sand Slough is a bypass channel that is inundated with the formation of Lake Red Bluff or when



STUDY OF THE IMPACTS
ASSOCIATED WITH
RAPID GATE REMOVALS AT
RED BLUFF DIVERSION DAM
TO FACILITATE BENEFITS FOR
WINTER RUN CHINOOK SALMON
MIGRATION AND SURVIVAL

▲
▲
▲
▲
▲
North

CITY OF
RED BLUFF

RED BLUFF
DIVERSION
DAM

Lake

flow direction
▶▶

SACRAMENTO

EAST SAND
SLOUGH

Bluff

RIVER

gates are out and Sacramento River flows exceeds 30,000 cfs at the upstream location north of the City of Red Bluff. Results from the rapid removal of gates of RBDD shall provide information useful to reduce straying and possible stranding of winter-run chinook salmon emigrating to the San Francisco-San Joaquin Delta.

c. Expected Benefits

This action will benefit migrating fry, juvenile and adult salmon passing RBDD during the Spring months and will reduce the period of time when migration fish are delayed by "gates in" operation. This action will also provide valuable insights relative to RBDD operations and will address impacts associated with straying and stranding of salmon in East Sand Slough resulting from flood control releases from Shasta Dam during the winter and spring months. This project will allow for assessment of environmental stressors (e.g. channel form changes, floodplain changes, hydrograph alterations, and entrainment and fish straying) and should lead to more fish friendly operations at RBDD. These studies are currently not conducted by the USFWS or USBR and are needed to reduce risk to winter-run chinook salmon migrating annually past RBDD.

d. Background and Biological/Technical Justification

Concern of operations of RBDD has been documented for decades by state and federal resource agencies and this barrier has been identified as a cause for decline of the winter-run chinook salmon. "Gates in" operations have been reduced from year round to four months with great benefits observed for all runs of anadromous salmonids; especially for the winter run. Benefits to adult and juvenile fish passage in terms of percentages in unimpeded passage at RBDD with current RBDD operation are presented in Table 1.

Table 1.

Benefits to Adult and Juvenile Fish Passage at RBDD with Current RBDD Operation (source: USBR)

<u>Race of Salmonid Benefited</u>	<u>Percentages in Unimpeded Passage</u>	
	<u>Adult</u>	<u>Juveniles</u>
Winter Run	84%	74%
Fall Run	76%	64%
Late Fall Run	100%	74%
Spring Run	20%	100%
Steelhead	83%	95%

Current research being conducted at RBDD by USBR includes the Red Bluff Research Pumping Plant, USBR Long Term Fish Passage Program, and USFWS RBDD In-River Studies. This work addresses long-term solutions which may further reduce periods of time gates are in and form

barriers to migrating anadromous salmonids. For the immediate future, the TCCA has identified operational alternatives that need to be tested to determine if RBDD intermittent operations can be altered to reduce barrier time to migrating fish during the Spring (April and May). This study shall also demonstrate that rapid withdrawal may reduce "gates in" requirements and provide operators flexibility to remove gates rapidly in September when gates are removed in the Fall. Until a long term solution for RBDD is agreed on and authorized over the next decade, all operational scenarios which may benefit winter-run chinook salmon should be explored. This project can provide immediate benefit to a listed species (winter-run chinook salmon).

e. Proposed Scope of Work

If agriculture demands are small, Phase I of this project will be implemented during the second two weeks of May 1998. This schedule is established to work within the current constraints of the operation of RBDD. Gates will be raised on May 20th allowing for a 72 hour draining of Lake Red Bluff and East Sand Slough to establish a baseline set of conditions for shoreline erosion or "sluffing" and possible fish straying and stranding in East Sand Slough. Once all observations are made, the gates will be returned to their lowered position until May 30th. On May 30th, the gates will be removed from the River for the second time and draining of the Lake will be accelerated to be completed in a 24-hour period. A second round of observations will be made to identify adverse impacts, if any, caused by the more rapid draining of the Lake. Gates will then be dropped for normal summer operations after observations are made. Phase I observations will include evaluation of geomorphic and hydraulic processes associated with rapid drawdown as well as evaluation of environmental and biological data associated with the rapid drawdown. Gates will then be left in until September 15, 1998 pursuant to the BO. This evaluation will be limited to the confines of Lake Red Bluff and East Sand Slough, an overflow bypass of the Sacramento River which is inundated when gates are in and Lake Red Bluff forms.

Phase II tasks will occur in the Fall of 1998 and are associated with a repeat of Phase I tasks which occurred in the previous Spring. The gates at RBDD will be raised about ten days early (prior to September 15th) and the Lake will be drained in 72 hours. Once observations are complete, the gates will be lowered and the Lake will refill and remain full until September 15th. On September 15th, the gates will be removed as per the BO and the Lake will be rapidly drained in 24 hours. The same task sequencing as in Phase I will be followed.

Phase I Tasks

- Task 1 Conduct and facilitate stakeholder agency meetings.
- Task 2 Prepare environmental documentation e.g. NEPA and CEQA.
- Task 3 Conduct baseline survey of Lake Red Bluff and East Sand Slough and establish monitoring stations and define topography.
- Task 4 Conduct baseline wildlife and habitat survey of the study area.
- Task 5 During the initial 72 hour drawdown period monitor, document and video perimeter of Lake Red Bluff and East Sand Slough.
- Task 6 Monitor East Sand Slough drawdown impacts on wildlife and habitat.
- Task 7 Monitor drawdown impacts to migrating salmonids.

- Task 8 Implement salvage operations as appropriate if stranding occurs.
- Task 9 Monitor water quality (temperature, turbidity).
- Task 10 Place baseline indicators (scouring chains, painted rocks) to assess impacts of drawdown of future events.
- Task 11 Conduct wildlife and habitat surveys to ascertain impacts of rapid drawdown event.
- Task 12 Compile data in a digitized format for future evaluation.
- Task 13 Prepare financial and technical reports (submit deliverables).

Repeat Tasks 5 through 13 for the second rapid (24-hour) drawdown event in May.

Phase II Tasks

Phase II will be a replication of the Phase I task schedule in the Fall of 1998.

Phase III

Phase III will be ongoing to evaluate geomorphology and hydraulic processes associated with rapid drawdown as well as evaluation of environmental and biological data associated with the rapid drawdown. It will be a dynamic process involving field surveys and the interpretation of field data.

Deliverables:

TCCA will:

- prepare environmental documentation (NEPA , CEQA).
- prepare quarterly and technical and financial reports.
- conduct and facilitate meetings with interagency resource agencies.
- prepare a salvage plan for fish stranding of fish in East Sand Slough.
- implement salvage operations as appropriate.
- prepare recommendations for annual O&M for East Sand Slough.
- conduct O&M activities to reduce stranding in East Sand Slough.

f. Monitoring and Data Evaluation

Technical reports will include summation of field observations including video and still photography during the rapid drawdown event. Incremental drawdown and associated lake levels at time of drawdown will be monitored. Turbidity and water temperature will be monitored in and downstream of Lake Red Bluff. East Sand Slough will be seined and monitored for fish presence. Appropriate fish salvage operations will be implemented as necessary. After completion of drawdown event, East Sand Slough will be investigated in order to ascertain scouring and deposition associated with the drawdown event. Habitat and wildlife surveys shall be conducted. Survey data will be digitized.

g. Implementability

This project will require cooperation with numerous state and federal agencies. TCCA will require consultation with NMFS, CDFG, and USFWS. TCCA will serve as the state lead agency for compliance with the California Environmental Quality Act and will request that USBR serve as lead agency for compliance with the National Environmental Policy Act (NEPA).

IV. COST AND SCHEDULE TO IMPLEMENT PROPOSED PROJECT.

a. Budget Costs

Implementation of this project will require partnership with numerous consultants and government agencies. TCCA shall administer and recruit consultants for this project. The following budget detail shown on Table 2 is based on the previously stated phases and tasks presented in Section III-e. The following headings - "Facilitate, Permit, Survey, Wildlife, Video, Fish, Salvage, Quality, Geomorphology, Data and Report" - are presented as key words to identify the inter-disciplinary nature of this project. TCCA will provide considerable in kind support and limit overhead and administration fees to ten percent.

The estimated total cost for the project is \$454,508. USBR has indicated that \$300,000 of 1998 USBR Energy and Water (E&W) funding may be available. The USBR contribution is still being secured. The CALFED funding request is anticipated to at least \$154,508 and will depend on the USBR contribution. TCCA will request that USBR fund at least fifty-percent of this project. Please note that E&W appropriations are not CVPIA funds nor can they be carried over to subsequent years. A sum of \$100,000 is included for required O&M of East Sand Slough. This estimate is based on previous O&M expenditures experienced by USBR.

b. Schedule Milestones

Phase 1 - Start date prior to May 1, 1998.
Phase II will be begin on or about September 1, 1998.
Project should be completed over a two-year period.

c. Third Party Impacts

The principal impact of this project would be to USBR. If successful, this project will lead to greater protection for winter-run chinook salmon and provide increased flexibility in the operation of the Central Valley Project.

Table 2

BUDGET COSTS

Project		Budget Costs			
Phase	Task	Service Contracts	Materials	Misc. & Other Direct Costs	Total
I	1	\$5,120	\$1,500	\$1,500	\$8,120
I	2	\$25,600	\$5,000	\$4,000	\$34,600
I	3	\$16,000	\$3,000	\$2,000	\$21,000
I	4	\$16,000	\$3,000	\$2,000	\$21,000
I	5	\$10,000	\$10,000	\$1,000	\$21,000
I	6	\$3,000	\$1,000		\$4,000
I	7	\$6,000	\$5,000	\$1,000	\$12,000
I	8	\$10,000	\$5,000	\$500	\$15,500
I	9	\$1,000	\$5,000		\$6,000
I	10	\$5,000	\$5,000		\$10,000
I	11	\$5,000	\$1,000		\$6,000
I	12	\$10,000	\$5,000		\$15,000
I	13	\$8,000	\$2,000		\$10,000
II	1	\$2,560	\$500	\$2,000	\$5,060
II	2	\$10,000	\$2,000	\$1,000	\$13,000
II	3	\$16,000	\$3,000	\$2,000	\$21,000
II	4	\$8,000	\$2,000		\$10,000
II	5	\$8,000	\$5,000	\$1,000	\$14,000
II	6	\$2,000	\$1,000	\$1,000	\$4,000
II	7	\$6,000	\$5,000	\$1,000	\$12,000
II	8	\$10,000	\$5,000	\$500	\$15,500
II	9	\$1,000	\$5,000		\$6,000
II	10	\$5,000	\$2,000		\$7,000
II	11	\$2,000	\$2,500		\$4,500
II	12	\$10,000	\$5,000		\$15,000
II	13	\$10,000	\$1,000		\$11,000
Subtotal		\$211,280	\$90,500	\$20,500	\$322,280
TCCA Admin. & Overhead				\$32,228	\$32,228
O&M Functions		\$100,000			\$100,000
Total Cost		\$311,280	\$90,500	\$52,728	\$454,508

V. APPLICANT QUALIFICATIONS

TCCA currently operates and maintains the Tehama-Colusa and Corning Canals of the Central Valley Project under a long-term contract with the USBR. It also works in partnership with USBR in the operation of facilities of the RBDD and has played a proactive role in addressing fisheries problems associated with RBDD. This partnership has developed and implemented numerous "adaptive management" techniques which have benefited the recovery of winter-run chinook salmon. The TCCA serves as a liaison and is a participant in all public forums and technical work groups associated with RBDD fisheries research. TCCA has made significant financial and technical contributions to resolution of RBDD fisheries concerns. TCCA has considerable experience at the programmatic level to administer the engineering and biological research required by this project. This project is intended to augment current efforts initiated by state and federal resource agencies and to continue to develop trust and partnership with these entities. TCCA will employ consultants familiar with RBDD fisheries and with wildlife, engineering, and hydrological issues associated with project implementation. TCCA will utilize in-house expertise available to coordinate project implementation and has designated Mr. Serge Birk as Technical Program Manager for this project.

Mr. Birk has served as program manager of numerous CVPIA initiatives: Keswick Fish Trench, Clear Creek Restoration, Coleman National Fish Hatchery Rehabilitation, Butte Creek Restoration (Western Canal Siphon Project), Unscreened Diversion Program as well as preparing environmental documentation for operation of the Klamath Project and construction of the Red Bluff Research Pumping Plant. Mr. Birk administered USBR Spring Run, Coho Salmon and Salmon Stamp Programs and was involved with the implementation Trinity River Fish and Wildlife Restoration Program. He was instrumental in developing partnerships with the fishing industry, agriculture, environmental groups, academia, resource agencies and Indian Tribes.

VI. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

In accordance with Table D-1 of the Request For Proposals, 1997 Category III, an executed Form Item 8, Non Discrimination Compliance Statement, is attached.

Also in accordance with Table D-1, the other required form, Standard Clauses – Service & Consultant Service Contracts for \$5,000 & Over with NonPublic Entities, will be submitted before or at the signing of the Final Contract.

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME

TEHAMA-COLUSA CANAL AUTHORITY

The company named above (hereafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5, in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIALS NAME

Arthur R. Bullock

DATE EXECUTED

July 23, 1997

EXECUTED IN THE COUNTY OF

Glenn

PROSPECTIVE CONTRACTOR'S SIGNATURE



PROSPECTIVE CONTRACTOR'S TITLE

General Manager

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

Tehama-Colusa Canal Authority